**Math Night at Glenwood Elementary**

**Kristen Cacyuk & Melissa Poland**

|  |  |
| --- | --- |
| **Tynker**    **Description Reference:**  <http://www.tynker.com/blog/articles/tynker-news/tynker-ipad-app-launched-today/> | The app is a great way for kids with no prior knowledge of programming to learn the basics of logic, and complements our self paced courses and school curriculum.  Tynker’s visual programming language makes it easy for children to get started with programming by simply dragging and dropping visual blocks to build a program. The Tynker iPad app contains puzzles that children solve by programming visual code blocks to achieve a goal. The initial release includes the following adventures to engage kids with appealing story lines:   * **Puppy Adventure**, where kids use logic and loop variations to help Pixel, the lost puppy, find his way home; * **Lost in Space**, where kids learn more advanced programming concepts like conditional logic and apply spatial orientation skills to lead astronaut Biff to his moon base avoiding asteroids and black holes; and * **Sketch Racer**, where Snap the Turtle can be programmed to draw complex geometric shapes using simple commands.   The puzzles are structured to gradually increase in complexity. By solving them, children learn to recognize patterns; break down a problem into smaller steps; engage in programming concepts like sequencing, loops and conditional logic; develop computer drawing and algorithmic thinking skills; and debug programs. |

|  |
| --- |
| **Tennessee’s State Standards**  **Grade: 03**  [**CCSS.ELA-LITERACY.RI.3.3**](http://www.corestandards.org/ELA-Literacy/RI/3/3/)  Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.  **Grade: 04**  **CCSS.ELA-Literacy.RI.4.10**  By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.  **Grade: 04**  **CCSS.ELA-Literacy.RI.4.7**  Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.  **Grade: 05**  **CCSS.ELA-Literacy.RI.5.10**  By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4–5 text complexity band independently and proficiently.  **Grade: 05**  **CCSS.ELA-Literacy.RI.5.3**  Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text. |

|  |
| --- |
| **Learning Objectives** Students will explore a basic computer programming language through an online coding game.Students will develop coding skills needed to develop websites, apps, and games. **Materials**   * Ipadwith Tynker Application * app description sheet handout   **Activity/Game Descriptions**   * [**Lost in Space**](http://www.brainpop.com/games/tynkerlostinspace/)**:** Students learn to drag function blocks together to build applications of increasing complexity that move an astronaut named Biff and his spaceship toward desired goals. As challenges get harder, students will learn to use logic skills to bundle commands and create algorithms. * [**Puppy Adventure**](http://www.brainpop.com/games/tynkerpuppyadventure/)**:** Students learn to drag function blocks together to build applications of increasing complexity in order to move a lost puppy named Pixel toward various desired goals. As challenges get harder, students will learn to properly bundle commands and create algorithms. The puzzles are designed to teach students about sequencing, repetition, and conditional logic. * [**Sketch Racer**](http://www.brainpop.com/games/tynkersketchracer/)**:** Students program a turtle named Snap to mimic geometric shapes and follow set patterns. Each puzzle presents a pattern and a starting position for Snap. Students are required to program the turtle using the tile-based commands such as "move forward," "move backward," "turn to the left" and "turn to the right." Each puzzle may have a number of correct solutions, but players are encouraged to solve them using the fewest possible blocks. With Sketch Racer, students will learn about sequencing, repetition and algorithmic logic. They will need some prior knowledge of angles and geometry to successfully complete the puzzles. * [**15 Blocks**](http://www.brainpop.com/games/tynker15blockchallenge/)**:** Students create a simple computer app using no more than 15 blocks. The activity allows players to work with pre-loaded characters, backgrounds, and movements to create an animation that requires logic and creativity to build. Programming commands are based on the Tynker system of visual programming blocks, which simulate basic coding commands and processes.   **Reference for Game Descriptions:** <http://www.brainpop.com/educators/community/lesson-plan/tynker-games-computer-programming/?bp-game=tynker-puppy-adventure>  **Differentiation**  Tynker can appeal to all levels of learning by assigning different challenges to different students. Activities and challenges can be adapted to meet the needs of different skill levels and interests in this very versatile coding application.  **References**  Application information and description:  <http://www.tynker.com/blog/articles/tynker-news/tynker-ipad-app-launched-today/>  Adaptable lesson plan for teachers to use along with the Tynker Application:  <http://www.brainpop.com/educators/community/lesson-plan/tynker-games-computer-programming/?bp-game=tynker-puppy-adventure> |

|  |
| --- |
| **Reflection regarding the process of conducting this activity:**   * What went well?   I started out introducing students the concept of coding using the Tynker app. The students were very excited to have the opportunity to play with the iPad technology. There were students waiting in line to be able to play! After explaining to the parents the concept of coding—and as they recognized how much their children were enjoying it—many of them seemed very interested in continuing the practice at home. I even spoke to a couple of adults that seemed interested in the topic for themselves.  Overall, I have a great night at Glenwood Elementary! I enjoyed introducing the students to something they had never done before. After figuring out how to adjust to the age and skill level of my visitors, many of them picked up on the concept of coding quickly and seemed to be very interested in exploring it.   * What could be improved upon?  It was clear that many of the students who visited our station had never heard of coding before and had no prior experience with it. Tynker appeared to be a little too difficult for many of our visitors. Given the time constraints that I had with each child, it was difficult to give them the opportunity to become familiar enough with the program for them to enjoy it. To adjust to the different age and skill levels, we decided to use the Kodable app instead. Most visitors seemed to have much more success with this app. Once they seemed to grasp the concept of coding on that level, I let them try with the Tynker app.  Most of the activities on the Tynker app were locked for purchase. This limited the variety of activities the students could complete, thereby limiting the amount differentiating that could be done. Having access to the entire program would likely improve the interest level that I received from the students for the program. * What would you change next time?  There was a limited number of iPads available at our station. There were a lot of students standing in line waiting for a chance to participate in the activity. Next time, I would take more iPads to limit the wait time for each student, as well as to give each student more time to play with the app.   I think Tynker would be a better app to introduce to students when they have adequate time to spend developing the concept and skill needed to enjoy the program. For young students with no prior knowledge of the coding process, I think it was too difficult for them to pick up on in the time we had available. Next time, I would start students out with a simpler app. Then, as their skills and knowledge grows, I would move them up to Tynker. |